

REMARKS

This is intended as a full and complete response to the Office Action dated December 18, 2006, having a shortened statutory period for response set to expire on March 18, 2007. Please reconsider the claims pending in the application for reasons discussed herein.

Claims 2-7, 9-21 and 40-46 are pending in the application after entry of this response and are shown above. Claims 2-21 and 40 stand rejected by the Examiner. Claim 40 has been amended, and new claims 41-46 have been added. No new matter has been introduced. Reconsideration of the pending claims is requested for reasons presented below.

35 U.S.C. § 112

Claims 40 and 2-21 are rejected under 35 U.S.C. § 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps.

Applicant has amended claim 40 to overcome this rejection. Thus, Applicant believes that claims 40 and 2-21 are now in condition for allowance and respectfully requests allowance of the same.

35 U.S.C. § 103

Claims 40 and 2-21 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Haruch, et al.* (4,349,156) in combination with *Klosterman, et al.* (4,787,404), and *Meyer, et al.* (5,730,163). The Examiner states *Haruch et al.* discloses "an atomizing spray nozzle. . . ." and further discloses "using the spray nozzle for washing a surface. . . [but does] not teach the pressure and the ratio as claimed."

The *Haruch et al.* reference however, teaches away from using the nozzle to clean a surface. The Examiner relies on a statement in the Background of the invention section describing prior art nozzles to teach "high impact washing." (Col. 1, ln 10). This

refers to nozzles not described in the *Haruch et al.* reference. The *Haruch et al.* reference specifically teaches away from high impact washing. The primary purpose of the *Haruch et al.* reference is a nozzle for snow making. For example, *Haruch et al.* states "the very fine atomized spray particles provided by the added air atomization...affords the most efficient utilization of both hydraulic and pneumatic energy by using a proper combination of high velocity air and liquid particularly adapted to making snow, as at ski resorts." (Col. 1, ln. 61-66). The *Haruch et al.* reference goes on to state that "[t]he primary purpose of the invention is the provision of a spray nozzle...to achieve very fine atomization." (Col. 2, ln. 50-53). Further, the *Haruch et al.* reference does not disclose coaxial bores. The *Haruch et al.* reference requires injecting the air and liquid at a 90° angle in order to maximize turbulence in the fluids. The fluids flow down the nozzle barrel and exit an orifice member. Therefore, the *Haruch et al.* reference does not teach coaxial bores or cleaning the dirty surface with the spray.

The Examiner relies on the *Klosterman et al.* reference to overcome the shortcomings of the *Haruch et al.* reference. Klosterman discloses an atomizer device having a liquid injection tube and a gas acceleration tube. However, the Figure shows that the acceleration tube is wider than the injection tube. Thus, Klosterman does not teach a downstream fluid port portion that is narrow than the upstream portion, as recited in claim 40. Because the combination of Klosterman and Haruch do not teach a downstream fluid port portion that is narrower than the upstream portion, withdrawal of the rejection is respectfully requested.

Moreover, combination of the coaxial tubes of the *Klosterman* with the *Haruch et al.* reference would frustrate the purpose of *Haruch*. The *Haruch et al.* reference requires injecting the air and liquid at a 90° angle in order to maximize turbulence in the fluids. For example, *Haruch et al.* states that the "[t]he air is conducted through the air chamber 13 and transmitted perpendicularly against the unstable liquid in the expansion chamber through the right angle openings 27 and 25, both at high velocity, to create maximum agitation and turbulence" (Col. 4, ln. 63-68). This is completely contrary to coaxial tubes of the *Klosterman et al.* reference which requires a coaxial arrangement for the invention to function. Therefore, *Haruch et al.* teaches away from a combination

with *Klosterman et al.* Thus, there is no motivation to combine the coaxial bores of *Klosterman et al.* with *Haruch et al.*

Further, regarding claims 40 and 2-21, the Examiner states one "skilled in the art would use the metering pump and/or metering valve taught by *Meyer et al.* in the *Haruch et al.* process to adjust the air and water pressure and the ratio to obtain optimum results." However, as stated above the *Haruch et al.* reference does not teach a coaxial bore. The *Meyer et al.* reference further does not include a coaxial bore. Therefore, the combination of *Haruch et al.* with *Meyer et al.* does not teach all of the limitations of claim 40. Therefore, the references recited by the Examiner either alone or in combination do not teach, show, or suggest mixing water and air under pressure in a nozzle device having coaxial bores, said nozzle having an upstream portion where the water and air under pressure are mixed to obtain a pressure for said mixture higher than the pressure outside the nozzle device as recited in claims 2-7, 9-21 and 40. Thus, Applicant believes that claims 2-7, 9-21 and 40 are in condition for allowance.

New Claims

New claims 41-46 have been added. No new matter has been added. Claims 41-46 depend from claim 40. As stated above, Applicant believes that claim 40 is in condition for allowance and therefore claims 41-46 are also in condition for allowance.

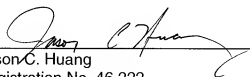
Additionally, the references, neither alone nor in combination teach, show, or suggest an end wall of said upstream portion makes a right angle with respect to a side wall of said narrower downstream fluid port portion, as recited in new claim 41.

Conclusion

In conclusion, the references cited by the Examiner, alone or in combination, do not teach, show, or suggest the invention as claimed.

Having addressed all issues set out in the office action, Applicant respectfully submits that the claims are in condition for allowance and respectfully requests that the claims be allowed.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Jason C. Huang", is written over a horizontal line.

Jason C. Huang
Registration No. 46,222
PATTERSON & SHERIDAN, L.L.P.
3040 Post Oak Blvd. Suite 1500
Houston, TX 77056
Telephone: (713) 623-4844
Facsimile: (713) 623-4846
Attorney for Applicant